

REMARKS

Summary of the Amendment

Upon entry of the above amendment, the specification and claim 1 will have been amended. Accordingly, claims 1 – 20 will remain pending. However, as the Examiner has withdrawn claims 14 – 20, directed to the non-elected invention, from further consideration, only claims 1 – 13 are currently under consideration by the Examiner.

Summary of the Official Action

In the instant Office Action, the Examiner has objected to the drawings, rejected claim 1 based upon formal matters, and rejected claims 1 – 13 over the art of record. By the present amendment and remarks, Applicants submit that the objections and rejections have been overcome, and respectfully request reconsideration of the outstanding Office Action and allowance of the present application.

Objection to Drawings is Moot

By the present amendment, as paragraph 31 of the specification has been amended to clarify that the remaining channels in Fig. 9 are represented by numeral “475,” Applicants submit the drawing objection has been rendered moot. Moreover, Applicants submit the above-noted amendment likewise provides adequate support for the subject matter recited in claim 2, such that this objection too is moot.

Accordingly, reconsideration and withdrawal of the drawing objection is respectfully requested.

Traversal of Rejection Under 35 U.S.C. § 112, Second Paragraph

Applicants traverse the Examiner’s rejection of claim 1 as being indefinite. The Examiner asserts the term “the remaining channels” lacks appropriate antecedent basis.

By the present amendment, independent claim 1 has been amended to clarify the recited remaining channels refer to the remaining channels of the plurality of channels, i.e., without the recited at least one channel. As the Examiner's formal rejection has been addressed and overcome by the instant amendment, Applicants request the Examiner reconsider and withdraw of the formal rejection under 35 U.S.C. § 112, second paragraph, and confirm claim 1, as well as the other pending claims, is fully in compliance with the requirements of the statute.

Traversal of Rejection Under 35 U.S.C. § 102(e)

1. Independent claim 1+

Applicants traverse the rejection of claims 1 – 3, 5, 8, and 9 under 35 U.S.C. § 102(e) as being anticipated by MATHEW et al. (U.S. Patent Application Publication No. 2005/0098822) [hereinafter "MATHEW"]. The Examiner, referring to Figs. 1 – 5, asserts MATHEW shows each and every feature of the above-identified claims. Applicants traverse the Examiner's assertions.

Applicants' independent claim 1 recites, *inter alia*, a silicon on insulator layer having *a plurality of channels*, a silicon oxide insulation layer *adjacent* the silicon on insulator layer, and a dielectric layer *adjacent* the silicon oxide insulation layer, wherein *at least one channel* has a gate configuration that is *different than the remaining channels*. Applicants submit MATHEW fails to disclose at least the above-noted feature of the invention.

While describing formation of a triple gate MOSFET device, MATHEW fails to provide any disclosure of the recited arrangement of elements presented in at least independent claim 1. In particular, the Examiner asserts MATHEW discloses a silicon oxide insulation layer (14) adjacent a silicon on insulator layer (no reference given) having a plurality of channels, and a dielectric layer (16) adjacent the silicon oxide insulating layer (14). However, contrary to the

Examiner's assertions, MATHEW discloses a patterned fin semiconductor structure that forms a channel 14 that is silicon.

Thus, Applicants submit the Examiner's identification of channel 14 as a silicon oxide insulation layer is contrary to the express disclosure of MATHEW, such that this rejection is improper and should be withdrawn.

Further, as MATHEW discloses channel 14 is a fin formed of silicon, rather than a silicon oxide insulation layer, Applicants submit the Examiner has not identified any disclosure in MATHEW of a silicon oxide insulation layer that is arranged adjacent a silicon on insulator layer and arranged adjacent a dielectric layer, as recited in at least independent claim 1.

As MATHEW fails to disclose at least the above-noted features of the invention, Applicants submit the applied art fails to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(e), such that the pending rejection is improper and should be withdrawn.

Further, Applicants submit that claims 2, 3, 5, 8, and 9 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that MATHEW fails to anticipate the invention recited in claims 2, 3, 5, 8, and 9.

Accordingly, Applicants request the Examiner reconsider and withdraw the rejections of claim 1 – 3, 5, 8, and 9 and indicate these claims are allowable in the next official communication.

2. Independent claim 10+

Applicants traverse the rejection of claims 10 – 13 under 35 U.S.C. § 102(e) as being anticipated by MATHEW et al. (U.S. Patent Application Publication No. 2005/0098822)

[hereinafter "MATHEW"]. The Examiner, referring to Figs. 1 – 5, asserts MATHEW shows each and every feature of the above-identified claims. Applicants traverse the Examiner's assertions.

Applicants' independent claim 10 recites, *inter alia*, a stack comprising a silicon on insulator layer, *a silicon oxide insulation layer on the silicon on insulator layer*, *a dielectric layer on the silicon oxide insulation layer*, wherein the dielectric layer is a high-k dielectric material, and *a protection layer on the dielectric layer*. Applicants submit MATHEW fails to disclose at least the above-noted feature of the invention.

While describing formation of a triple gate MOSFET device, MATHEW fails to provide any disclosure of the recited arrangement of elements presented in at least independent claims 10. In particular, the Examiner asserts MATHEW discloses a silicon on insulator layer 15, a silicon oxide insulation layer (13) on the silicon on insulator layer, and a dielectric layer (14) on the silicon oxide insulation layer. However, contrary to the Examiner's assertions, layers 15 and 13 of MATHEW are not part of the stack, rather, the stack is arranged on top of these layers (i.e., "Overlying insulating layer 13 is a patterned fin semiconductor structure" MATHEW, p. 2, para. 0018, lines 4 and 5). Moreover, Applicants note MATHEW disclose element 14 is a patterned fin semiconductor structure formed of silicon, but fails to provide any disclosure of being a high-k dielectric, as recited in at least independent claim 10.

Thus, Applicants submit the Examiner's identification of layers 15 and 13 as part of the recited stack is contrary to the express disclosure of MATHEW, and the assertion that channel 14 of MATHEW is formed of a high-k dielectric material is not supported by the express disclosure of the applied art. Thus, the Examiner's rejections, based upon his assertions regarding the disclosure of MATHEW, are improper and should be withdrawn.

As MATHEW fails to disclose at least the above-noted features of the invention, Applicants submit the applied art fails to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(e), such that the pending rejection is improper and should be withdrawn.

Further, Applicants submit that claims 11 – 13 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that MATHEW fails to anticipate the invention recited in claims 11 – 13.

Accordingly, Applicants request the Examiner reconsider and withdraw the rejections of claim 10 – 13 indicate these claims are allowable in the next official communication.

Traversal of Rejection Under 35 U.S.C. § 103(a)

Applicants traverse the rejection of claims 4, 6, 7, 11, and 12 under 35 U.S.C. § 103(a) as being unpatentable over MATHEW. While acknowledging MATHEW fails to show the gate dielectric of the remaining channels is a material comprising silicon dioxide, nitride dioxide, and silicon oxide that has undergone a plasma nitridation process, or the cover layer is metal or thin polysilicon, the Examiner asserts it would have been obvious to modify MATHEW to include these features. Applicants traverse the Examiner's assertions.

Applicants initially note the Examiner's regarding "silicon oxide that has undergone a plasma nitridation process" is not a product by process limitation, but a recitation of a specific material so as to describe the structure. In this regard, the claim at issue does not recite any process steps, such that the Examiner's assertions regarding a product by process limitation is inaccurate and should be withdrawn.

Moreover, while objecting to the recitation as product by process, the Examiner has not

identified any of the materials recited in Applicants' claim 4 that would have been rendered obvious by MATHEW. Further, MATHEW does not provide any arguable disclosure of its various channels being formed of different gate dielectric materials, such that the Examiner has not provided a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

With regard to the protection layer being formed of metal or polysilicon, the Examiner has merely asserted it would have been obvious to modify MATHEW to use such materials since it is known to select a material on the basis of its suitability for a desired application, which the Examiner asserts is for making a mask or protecting layers during etching or patterning. However, the Examiner has not identified any disclosure in MATHEW that layer 22 is a mask or arranged to protect layers during etching or patterning, or that it would have been obvious to form layer 22 with metal or a polysilicon, as asserted by the Examiner. Applicants request the Examiner identify the portions of MATHEW's disclosure relied upon for this rejection so Applicants can better address the Examiner's conclusory arguments of obviousness.

Further, Applicants submit that claims 4, 6, 7, 11, and 12 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that LIN fails to anticipate the invention recited in claims 4, 6, 7, 11, and 12.

Accordingly, Applicants request the Examiner reconsider and withdraw the rejections of claim 4, 6, 7, 11, and 12 and indicate these claims are allowable in the next official communication.

Request for Rejoinder of Non-Elected Invention

Applicants request the Examiner rejoin claims 14 – 20, directed to the non-elected invention, for examination. In this regard, the non-elected claims are directed to a method for

providing a transistor and the method claim includes the features recited in transistor claim 1.

Application is Allowable

Thus, Applicants respectfully submit that each and every pending claim of the present invention meets the requirements for patentability under 35 U.S.C. §§ 102 and 103, and respectfully request the Examiner to indicate allowance of each and every pending claim of the present invention.

Authorization to Charge Deposit Account

The undersigned authorizes the charging of any necessary fees, including any extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, to Deposit Account No. 09 – 0458 in order to maintain pendency of this application.

CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 1 – 13. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Respectfully submitted,
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